

## ABSTRACT OF THE DISCLOSURE

A hydrogen gas sensor capable of accurately measuring hydrogen concentration of a measurement gas atmosphere in the presence of a variety of interfering gasses such as  $H_2O$  and  $CO$ . In the hydrogen gas sensor, the flow sectional area of a diffusion-rate limiting portion 6 is rendered small; the electrode surfaces of first and second electrodes 3 and 4 are rendered large; and/or a solution containing a polymer electrolyte which may be identical to that of a proton-conductive layer 2 is applied onto the surfaces of the first and second electrodes 3 and 4 to thereby form a layer containing the polymer electrolyte. Thus, the rate of conduction of protons from the first electrode 3 to the second electrode 4 becomes greater than the rate at which protons are derived from hydrogen which is introduced onto the first electrode 3 via the diffusion-rate limiting portion 6.